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ABSTRACT

This study focuses on the relationship between blending ability and reading comprehension among 80 prereading children from three private preschools. Three methods of instruction were tested: One group was instructed with an auditory method; the second group was instructed with an auditory-visual method; and the third group practiced the basic set of sound/letter associations but was given no formal instruction in blending. The results indicated that training with both the auditory-visual method and the auditory method was significantly more effective on children's ability to pronounce the list of synthetic words than was practice on sounds and letters. It also showed that there were no differences in children's ability to blend stop or continuant sounds at the beginnings or ends of words. Several implications were discussed for teaching blending. (MB)

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THE IMPORTANCE OF TEACHING BLENDING IN BEGINNING READING PROGRAMS: SOME RECENT RESEARCH FINDINGS

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There is good evidence to support the premise that children must be able to analyze parts of words and recombine them into new units in order for transfer to the reading of unfamiliar words to occur (see Jeffrey & Samuels, 1967; Jenkins, Bausell, & Jenkins, 1972; Muller, 1973). Children who have not generalized this concept are prevented from progressing in reading beyond the ability to memorize each word as a separate entity--often an effective beginning strategy which gradually fails as the child is unable to keep up with the enormity of the task as s/he progresses through the grades. Many children are able to learn independently that parts of words can be separated from the whole unit, put together with other parts, and that this new unit can then be tested against semantic memory and decoded to meaning. As this new unit is encountered again and again, it is eventually recognized at sight with no analysis of its parts necessary for obtaining meaning, and the child is well on the way to acquiring a large sight vocabulary. Other children never induce this principle, and must be taught the whole process step by step. Most reading programs teach to the first group, however, and do not include specific instruction in segmentation and blending--apparently assuming that such skills are acquired automatically. The numerous first grade reading failures, however, do not support this assumption. Even though a substantial number of children do acquire the concept spontaneously, Ramsey (1972) found that 40% of the errors made on his test of unfamiliar words in context by second

graders who had not yet learned to read were errors due to blending difficulties. The elements of the words were known, but the children were unable to put them together. Haddock and Tiano (Note 1) also found high correlations between the ability to blend a given sound-letter correspondence with a common base and reading achievement as measured by the paragraph subtests of the Stanford Achievement Test in second grade (r = .79), in fourth grade (r = .60), and in sixth grade (r = .55).

Although the need for such instruction has been established, just what instruction would be most effective is still under investigation. There is considerable opposition to the most frequently attempted method--that of teaching the child to produce individual phonemes when presented with a string of letters and then to blend them together, e.g. c - a - t, cat. This opposition has been based on a traditional belief in reading circles that the addition of an "intrusive vowel" or schwa to stop sounds (sounds that are formed by complete closure of the air passage) will always interfere with blending ability and will never produce a fused unit (see Venezky, 1972; Gleitman & Rozin, 1973). Teachers are cautioned never to pronounce these sounds in isolation, or if they do so, to be very careful not to add a vowel to the pronunciation (essentially a useless caution since this is a linguistically impossible task).

In an attempt to find what sort of training was effective at teaching the segmentation-blending skill and to also investigate the

"intrusive vowel" phenomenon, Haddock (1976) conducted an experiment with 80 prereading children from three private preschools. A test of synthetic words was formed from a basic set of seven sound-letter correspondences--three continuants (sh, s, f), or consonants whose pronunciation can be prolonged indefinitely; three stops (p, t, k) or consonants which can only be pronounced with the addition of some sort of vowel sound (usually a schwa); and one vowel (ee). Part One of the test was written so that an equal number of stops and continuants were used at the beginning and ends of words: seet, teef, keesh, sheek, peef, feep, teek, feesh. Part Two of the test was written so that single consonants were combined into clusters in order to test generalization of the blending concept to totally unfamiliar patterns: speet, steef, skeep, seefs, feeks, teets, skeeps, speefs.

Only those children who could not pronounce the synthetic words on the pretest were included in the study. These children, having an average age of 62 months, were trained in blending with three methods of instruction: One group of children was instructed with an auditory method, where teachers pronounced training words in parts, i.e. sh - eet, and asked the children to recombine them into the whole word, i.e. sheet. Children did not look at the printed word while working on these tasks, but did review the basic set of sound-letter correspondences daily so that memory did not become a significant factor. The second group of children was instructed with an auditory-visual method, where teachers used manipulatives to point out how

sounds and letters can be substituted for one another to make new words. For example, the teacher might show the children a card on which the word feet was written, saying something like "my word is feet--now I'm going to make the word..." here the teacher would fold down a flap on which the letters sh was written so as to make the word sheet. If children could pronounce this word it was assumed they had adequate blending skills with the consonant digraph sh in initial position. If they were not able to blend the parts together to make the new word, the teacher led them in increasingly directed steps to putting the parts together to come up with the word sheet. The third group of children practiced the basic set of sound-letter associations, but were given no formal instruction in blending.

Children were trained for a total of 3 weeks, 10 minutes per day, 4 days per week. On Fridays of each of the weeks during the experiment, all children were checked for mastery of the training task. If they were able to pronounce the criterion training words, they were given the posttest. If they had not mastered the training task, their instruction continued for the following week. Finally, at the end of 3 weeks, all the children who had not mastered the training tasks, as well as the children in the control group, were posttested.

Results of the study indicated that training both with the auditory-visual method and the auditory method was significantly more effective than practice on sounds and letters on children's ability

to pronounce the list of synthetic words. The auditory-visual method was also significantly more effective than the auditory method. Results also showed that there were no differences in children's ability to blend stop or continuant sounds at the beginnings or ends of words when the children had been specifically trained to blend those particular sound-letter correspondences in those positions. Results also showed that very few of the children, even though they were perfectly able to blend single letters in initial and final positions, were able to generalize the blending concept to blending the single letters when they were presented as a cluster, e.g. even though children were able to blend an s or a t separately at the beginning of two different words, they had great difficulty in blending a word beginning with the st cluster. The few children who were able to generalize to the blending of clusters were members of the auditory-visual instructional group.

There were several implications of this study. The primary one was that children do need to be specifically taught to blend sounds and letters together. Only two of the children in the control group were able to induce the principle on their own by just practicing on the sound-letter associations. The second implication was that children are not bothered by the insertion of a schwa or "intrusive vowel" enough to make a difference in their blending ability. If such an addition did make a difference, the children should have been able to blend many more continuants than stops. This was not the case,

indicating that the paradigm of c - a - t fused to cat may not need to be rejected after all. A third implication was that children may need to be taught the blending of each single and each clustered sound-letter correspondence as separate objectives.

A replication of this study with several refinements was conducted in the fall of 1976. In the original study, children had not been randomly assigned to groups because this would have disrupted the already established routines of the preschools. In the follow-up study, children from two kindergartens and three first grade classrooms were randomly assigned to each of three treatment conditions. These children were also from a different population, taken from public schools in an area that was 60-70% bi-lingual (Spanish-English). Instruction proceeded in much the same way as in the first study, with the exception that children were not checked weekly for mastery of the criterion tasks, but were all trained for 3 weeks, 10 minutes per day, and then posttested during the 4th week by a graduate student who did not know to which group the children had been assigned. All instruction was given by the regular classroom teachers who had been trained in both training methods and in methods of practicing sound-letter associations. Each teacher rotated her presentation of all three treatments, and groups were combined across classrooms for analysis.

The children's responses on Parts One and Two of the posttest were scored for total number of initial and final consonants blended

correctly (32 possible). Analysis of variance indicated a significant difference in number of words blended among the three groups, $F(2,54) = 6.66$, $p < .01$). Post hoc analyses of the group means using t tests indicated that children taught to blend by the auditory-visual method blended significantly more synthetic words ($M = 7.6$, $SD = 8.01$) than those in the control group ($M = 1.35$, $SD = 2.44$), $t(37) = 3.55$, $p < .001$, but that children taught to blend with an auditory method ($M = 3.16$, $SD = 5.10$) did not blend significantly more than those in the control group ($M = 1.35$, $SD = 2.44$) although the differences did approach significance $t(39) = 1.51$, $p < .20$). Differences in words blended between the auditory-visual and the auditory group also approached significance, $t(32) = 1.96$, $p < .10$).

The children in this replication did not learn to blend, as measured by the pronunciation of the posttest of synthetic words, nearly as well as the children in the original study. This difference generally may be attributed to the differences in the children--all the subjects in the first study were native speakers of English, but at least 60% of the subjects in the replication were learning to read in a second language. The fact that the children were not brought to criterion on the training tasks before being posttested also probably made a great difference. Had the teachers known who was not understanding and therefore been able to direct their instruction more to individuals within the groups, many more children may have learned to blend the sounds and letters together. Even with these differences,

however, the results of the study do indicate the effectiveness of specific instruction in blending upon the ability of children to pronounce unfamiliar words. In the replication, there were also no differences between ability to blend stop or continuant consonants in initial or final positions, and there was also little generalization to the ability to blend clusters composed of the letters which had been trained singly.

The two classroom studies reported here, along with previous evidence from laboratory studies cited earlier, strongly suggest that beginning readers would profit from reading programs which include a component of blending instruction along with other basic decoding skills. It can be assumed that those children who would eventually induce the blending principle independently would not be harmed by such instruction--they would merely acquire the principle sooner--while the children who are unable to learn to blend without explicit instruction would get the help they need. It is recommended that reading teachers develop ways to diagnose and teach blending skills, keeping in mind that an auditory-visual method appears to be most effective. Resnick and Beck (1976) and Wallen (1972) have reported auditory-visual techniques for testing and teaching blending ability which appear to be highly successful.

Reading teachers may also consider the very low rate of generalization that specific instruction with one pattern had to blending ability with more complex patterns. Children were not able to transfer

the ability to blend single consonants to the ability to blend those same consonants when presented in clusters. Although more research is needed on these specific areas, there is some indication here that the student's blending ability may need to be checked for all common patterns, including single consonants, consonant clusters and consonant digraphs in both initial and final positions, as well as for common vowel patterns such as CVC and CVC+e. The record sheet in Figure 1 is offered as a starting point for checking both sound-letter association (memory pattern) and blending ability with common English spelling patterns.

Insert Figure 1 about here

The studies also revealed an interesting finding regarding the ability of children to blend stop and continuant consonants. If pronouncing stop sounds in isolation (with the addition of the necessary schwa or "intrusive vowel") does interfere with blending ability, many more continuants should have been blended correctly by the children, since these can be pronounced without the added vowel sound. This was not the case. When children were trained to blend the specific consonant in initial and final positions, it made no difference whether the consonant was a stop or a continuant.

In consideration of Chall's (1967) conclusion that code-breaking programs are most effective for teaching beginning decoding skills,

and because most of the criticism of code-breaking programs centers around pronunciation of sounds in isolation, reading teachers may want to reconsider this old taboo which has gone unchallenged for so many years.

Reference Notes

1. Haddock, M. and Tiano, K. The relationship between blending ability and reading comprehension. Unpublished paper, 1976. (Available from Maryann Haddock, Reading Center, Arizona State University, Tempe, AZ. 85281).

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Figure Caption

Figure 1. Memory and Blending Skills Record

Student _____ Grade _____
School _____ Age _____
Teacher _____ Examiner _____
Pretest Date _____
Posttest Date _____

G = Grade level at which concept should be mastered (year and month)
M = Memory Pattern
Bl = Blending

= Knows at pretest
= Needs to learn
= Instruction (small x for each presentation)
= Knows after instruction

	G	M	Bl
1. INITIAL CONSONANTS-- Consistant (Suggested base: -ab)			
b	1.9		
d			
f			
h			
j			
k			
l			
m			
n			
p			
q(u)			
r			
s			
t			
v			
w			
y			
z			
2. INITIAL CONSONANTS-- Inconsistant (Suggested bases: -ab/-lb)			
c (cat)*	1.9		
g (goat)			
c (city)	2.5		
g (gym)	2.9		
3. INITIAL CONSONANT DIGRAPHS (Suggested base: -ab)			
ch	1.9		
sh			
th			
ph	3.5		
4. INITIAL CONSONANT CLUSTERS (Suggested base: -ab)			
bl	1.9		
br			
fl			
fr			
gr			
pl			
st			
tr			
cl			
cr	2.5		
dr			
gl			
pr			
sk			
sl			
sm			
sn			
sch			
tw			
sc	3.5		
scr			
sp			
sw			
spl			
spr			
squ			
str			
thr			
dw	4.5		
5. INITIAL SILENT LETTERS (Suggested base: -ab)			
kn	2.5		
wr			
gn			
6. FINAL CONSONANTS-- Consistant (Suggested base: be-)			
-b	1.9		
-bb			
-d			
-dd			
-f			
-ff			
-k			
-ck			
-l			
-ll			
-m			
-n			
-nn			
-p			
-s			
-ss			
-t			
-tt			
-v(e)			
-x			
-zz			
7. FINAL CONSONANTS-- Inconsistant (Suggested base: be-)			
-c (arc)	1.9		
-g (wig)			
-c(e)	2.5		
-g(e)	2.9		
8. FINAL CONSONANT DIGRAPHS (Suggested base: be-)			
-sh	1.9		
-th (moth)			
-th(e)(teethe)			
-ng	2.9		
-ph	3.5		
9. FINAL CONSONANT CLUSTERS (Suggested base: be-)			
-ld	1.9		
-nd			
-ft	2.9		
-lt			
-nk			
-sk			
-st			
-lp	3.5		
-mp			
-nch			
-nt			
-pt			
-sp			
-tch			
10. FINAL SILENT LETTERS (Suggested base: be-)			
-mb	2.9		
11. VOWELS			
a. Short-CVC or VC (Suggested base: b-f)			
a (hat)	1.9		
e (met)			
i (bit)			
o (hop)			
u (cut)			
b. Long-CVC+e (Suggested base: b-fe)			
a (nate)	2.5		
e (mete)			
i (bite)			
o (hope)			
u (cute)			
c. Long CV (Suggested base: b-)			
o (so)	2.9		
e (me)			
y (my)			
d. R-Controlled (Suggested base: b-f)			
ar (harp)	2.5		
ir (fir)			
er (fern)			
ur (burn)			
or (born)			
e. Vowel Teams (Suggested base: b-f)			
ai (brain)	2.5		
ay (pay)			
ee (cheek)			
ea (meat)			
ea (bread)			
oo (spoon)			
oo (look)			
au (auto)	2.9		
aw (lawn)			
al (bald)			
a'l (ball)			
ei (eight)			
ei (seize)			
ew (dew)			
ie (field)			
oa (boat)			
oi (coin)			
ou (mouse)			
ow (crow)			
ow (cow)			
oy (toy)			
i+gh (light)	3.5		
12. ENDINGS (Suggested base: babb-)			
-s	1.9		
-ed			
-ing			
-er	2.5		
-es			
-ies			
-est	2.9		
-ey			
-y			
13. OTHER PATTERNS			

*Words in parentheses are examples of the pattern as it might be used in English. These are not to be presented as part of the test.

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